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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,655	04/16/2001	Dharshini Chryshantha Fongalland	JMYT-236US	2279

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RATNERPRESTIA  
P O BOX 980  
VALLEY FORGE, PA 19482-0980

EXAMINER

BOYD, JENNIFER A

ART UNIT	PAPER NUMBER
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1771

8

DATE MAILED: 05/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/807,655

Applicant(s)

FONGALLAND ET AL.

Examiner

Jennifer A Boyd

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-14, 17 - 34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-14 and 17 - 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The Applicant's Amendments and Accompanying Remarks, filed March 20, 2003, have been entered as Paper No. 7 and have been carefully considered. Claims 1 – 12 and 15 - 16 have been cancelled, claims 17 and 23 have been amended and claims 13 – 14 and 17 – 34 are pending. The Examiner acknowledges the inclusion of an Abstract and objection to the Specification has been withdrawn. In light of the Applicant's amendments, the Examiner withdraws the 35 U.S.C. 112, 2<sup>nd</sup> paragraph rejection of claims 6 - 8 and 23 as set forth in paragraphs 4 - 6 of Paper No. 6. In view of the Applicant's arguments and cancelled claims, the Examiner withdraws the 35 U.S.C. 102(b) as being anticipated by Kuntzburger et al. (US 5,547,550) of claims 1-10, 13, 15, 16, 19, 20 and 23 as set forth in paragraph 8 of Paper No. 6. Additionally, the Examiner withdraws the 35 U.S.C. 102(b)/103 rejection as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kuntzburger (US 5,547,550) of claims 14, 21 and 22 as set forth in paragraph 10 of Paper No. 6. The cancellation of claims 11 and 12 renders the 35 U.S.C. 103(a) rejection as being unpatentable over Kuntzburger et al. (US 5,547,550) in view of Bachot et al. (US 4,743,349) moot as set forth in paragraph 11 of Paper No. 6. In light of the Applicant's arguments, the Examiner withdraws the 35 U.S.C. 103(a) rejection as being unpatentable over Kuntzburger et al. (US 5,547,550) in view of Denton et al. (US 6,042,958) of claims 17 and 18 as set forth in paragraph 12 of Paper No. 6. Despite these advances, the invention is not found be patentable for reasons herein below.

*Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 13, 17 - 20, 23 – 27 and 31 - 34 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Denton (US 6,042,958).

Denton is directed to a composite membrane particularly useful for electrochemical devices (column 1, lines 1 – 5).

As to claims 13 and 23, Denton teaches a composite membrane comprising a porous substrate of randomly orientated individual fibers and at least one ion conducting polymer (Abstract). Denton teaches that silica and glass fibers can be used (column 3, lines 5 – 10). The fibers may be coated with non ion-conducting polymers to change their characteristics such as polytetrafluoroethylene (PTFE) (column 5, lines 25 – 34). Denton teaches that it is also beneficial to incorporate particulate material within the membrane, such as silica, which first is coated with an ion-conducting polymer (column 5, lines 40 – 50).

As to claims 17 and 18, Denton teaches that the membrane is made from a process based on paper-making technology. In the membrane making process, the fibers are dispersed in water to form a dilute slurry. The slurry is deposited onto moving mesh bed, dried and then compacted. Afterwards, the membrane is coated and filled with a polymeric material by means of a nip

Art Unit: 1771

roller. In one further embodiment, particulate matter, i.e. silica particles, may be added to the fiber containing slurry and/or the polymeric material. The particulate matter may be first coated with an ion conducting polymer (column 6, lines 15 – 40). Denton teaches that fluorinated polymers can be ion conducting polymers (column 3, lines 30 – 65).

As to claims 19 and 20, the patent limitations are discussed above.

As to claims 24, 31 and 32, the limitations are not given patentable weight because the intermediate form of the silica powder, such as in an aqueous dispersion or colloidal aqueous solution, has no impact on the final product. It is suggested to the Applicant to include these limitations in a process claim in order to have patentable weight.

As to claims 25 and 26, Denton teaches that the fluorinated hydrocarbon polymer can be polytetrafluoroethylene (PTFE), which is a non ion-conducting polymer (column 5, lines 27 – 31).

As to claim 27, the limitations of the patent are discussed above.

As to claim 33, Denton teaches that silica and glass fibers can be used (column 3, lines 5 – 10).

As to claim 34, Denton teaches that the fibers have diameters typically in the range of 0.1 to 50 micrometers (column 3, lines 13 – 16).

### ***Claim Rejections - 35 USC § 102/103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 1771

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 14 and 21 – 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Denton (US 6,042,958).

Although Denton does not explicitly teach the claimed  $\pm 16\%$  change in area as required by claim 14,  $\pm 10\%$  change in area as required by claim 21 and 0 to 6% change in area as required by claim 22 of the membrane when dried then boiled, it is reasonable to presume that the shrinkage in area is inherent to Denton. Support for said presumption is found in the use of like materials and similar construction (i.e. a porous membrane of either silica or glass fibers comprising PTFE, colloidal silica and an ion-conducting polymer), which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, these claimed properties would obviously have been provided once the Denton product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) as to providing of this rejection made above under 35 USC 102.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 28 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Denton (US 6,042,958).

Denton discloses the claimed invention except the ratio of silica to polymer is in the range of 95:5% to 5:95% as required by claim 28, in the range of 70:30% to 30:70% as required by claim 29 and in the range of 50:50% as required by claim 30. It should be noted that the ratio of silica to polymer is result effective variable. For example, as the amount of silica increases, the number of sites available for proton migration and/or the sites available for holding water within the substrate increases or as the amount of ion conducting polymer increases, the conductivity increases. It would have been obvious to one having ordinary skill in the art at the time the invention was made to create the porous membrane Denton with the ratio of silica to polymer is in the range of 95:5% to 5:95% as required by claim 28, in the range of 70:30% to 30:70% as required by claim 29 and in the range of 50:50% as required by claim 30, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the ratio of silica and polymer in order to achieve the appropriate level of sites for proton migration and conductivity.

### ***Response to Arguments***

8. Applicant's arguments filed as Paper No. 7 on March 20, 2003 have been fully considered but they are not persuasive.

9. In response to Applicant's arguments that Denton does not disclose the process in claim 17, the Examiner argues the contrary. First, the Applicant sets forth process steps but does not specify that the process steps must be in a certain order. The only limitations set forth is that step

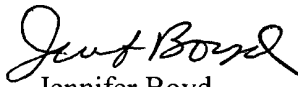
Art Unit: 1771


(d) is done before step (c) and that the steps of section (i) are performed before the step of section (ii). Denton discloses every step as set forth in claims 17 and 18 as discussed in the rejection above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Jennifer Boyd  
May 7, 2003

  
TERREL MORRIS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700